E-3283

PWA 523-C

Issued 1/5/60
Revised 2/15/61
Revised 6/20/63

PRATT & WHITNEY AIRCRAFT SPECIFICATION

FUEL, AIRCRAFT TURBINE ENGINE

1. ACKNOWLEDGMENT: Vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. PURPOSE: To establish requirements for low volatility fuel for use in Pratt & Whitney Aircraft turbine engines.

3. TECHNICAL REQUIREMENTS: Tests shall be performed, insofar as practicable, in accordance with the latest issue of the listed ASTM test methods.

	Gravity, deg API	47 - 53	ASTM D287
	Distillation Temperature, F		ASTM D86
	Initial Boiling Point	375 min	
	10% Evaporated	400 min	
	20% Evaporated	To be reported	
	50% Evaporated	420 min	
	90% Evaporated	max 500	
	End Point	max 550	
	Loss, %	max 1.5	
	Residue, %	max 1.5	
	Sulfur, %	max 0.1	ASTM D1266
	Mercaptan Sulfur, % by wt (See Note 1)	max 0.005	ASTM D1323 or D1219
	Existent Gum, mg per 100 ml	max 7.0	ASTM D381
ø	Freezing Point, F	max -40	ASTM D1477
	Net Heat of Combustion, Btu per lb	18,900 min	See Note 4
	Luminometer Number	100 min	See Note 2
	Aromatic Content, % by volume	max 5	ASTM D1319
	Copper Strip Corrosion	Slight discoloration permitted	ASTM D130
	Viscosity, Cs at -30 F	max 15	ASTM D445
	Water Tolerance, ml	max 2	ASTM D1094
	Flash Point, F	150 min	ASTM D93
ø	Vapor Pressure, psia at 300 F	max 2.7	See Note 3
ø	Vapor Pressure, psia at 500 F	max 45	See Note 3
	Specific Heat, Btu per lb per deg F at 300 F	0.6 min	See Note 4
	Thermal Stability		See Note 5
	Pressure Change, in. Hg	max 5	
	Preheater Deposit Code	max 2	

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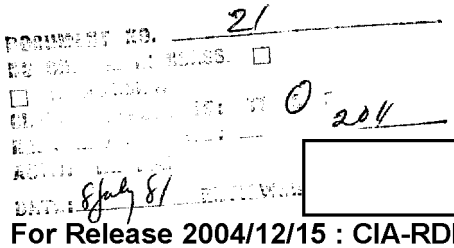
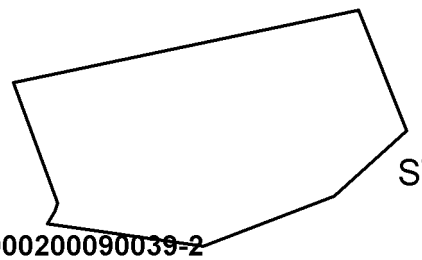
USAF review(s) completed.





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Note 1. Mercaptan sulfur determination may be omitted provided Doctor Test in accordance with ASTM D484 is conducted and results are negative.

Note 2. Luminometer number shall be determined in accordance with the method outlined in 1959 Preprint, ASTM Report of Committee D-2, Appendix VIII.

Note 3. Value shall be calculated using Chart PWA FL 60-17. Right is reserved by purchaser to determine conformance to the 300 F vapor pressure requirement by using a reflux method as outlined in Report PWA FL 60-18.

Note 4. Value shall be obtained using a recognized test method acceptable to Pratt & Whitney Aircraft.

Note 5. Thermal stability shall be determined in a CRC High Temperature Research Fuel Coker with reservoir fuel temperature maintained at 300 F during 5 hr operation at conditions of 500 F preheater temperature, 600 F filter temperature, and 6 lb per hr fuel flow rate.

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3.2 Additives:

3.2.1 One or a combination of the following inhibitors may be added to the basic fuel in total concentration not greater than 1.0 lb of inhibitor, not including weight of solvent, per 5000 gal of fuel, to prevent formation of gum:

N, N'-di-secondary-butyl-para-phenylenediamine
2, 4-dimethyl-6-tertiary-butyl phenol
2, 6-ditertiary-butyl-4-methyl phenol
2, 6-ditertiary-butyl phenol
75% 2, 6-ditertiary butyl phenol
10-15% 2, 4, 6-tritertiary butyl phenol
10-15% ortho-tertiary butyl phenol

3.2.2 The use of Pratt & Whitney Aircraft approved additives to inhibit corrosion and to extend the high temperature stability is permitted.

4. QUALITY:

4.1 Fuel shall consist solely of hydrocarbon compounds except as otherwise specified herein. It shall be free from water, sediment, and suspended matter, and shall be suitable for use in aircraft turbine engines.

4.2 The odor of the fuel shall not be nauseating or irritating. No substances of known dangerous toxicity under usual conditions of handling and use shall be present.

5. CONTROL: Control of quality and control of shipments shall be in accordance with the latest issue of PWA Specification 300.

6. REJECTIONS: Fuel not conforming to this specification or to authorized modifications will be subject to rejection.

Notes. Sections 1 and 5 apply only to Pratt & Whitney Aircraft operation.
Chart FL 60-17 and Report FL 60-18 are available upon request.